

ABSTRACT OF DISCLOSURE

An orientation sensor especially suitable for use in an underground device is disclosed herein. This orientation sensor includes a sensor housing defining a closed internal chamber, an arrangement of electrically conductive members in a predetermined positional relationship to one another within the chamber and a flowable material contained within the housing chamber and through which electrical connections between the electrically conductive members are made such that a comparison between an electrical property, specifically voltage, of a first combination of conductive members to the corresponding electrical property of a second combination of conductive members can be used to determine a particular orientation parameter, specifically pitch or roll of the sensor. In one embodiment disclosed herein, the electrically conductive members include an array of wires, as contrasted with plates or cylinders and in all of the embodiments disclosed herein in which the sensor functions as a pitch sensor, the conductive members are adjustably configured so that the sensor can be calibrated.